

Question 1

The screenshot shows the Scaler.com interface for a problem titled "King and Mathematician". The browser tabs include "Bang...", "DSA...", "404...", "airloc...", "Scale...", "DSA...", "Sc...", "Onlin...", "Chat...", and "Inbo...". The URL is "scaler.com/test/b8e90fdd08/#/problem_3". The page header shows "DSA: Contest 1: Arrays & Bit Manipulation", "Reattempt 2", a timer at "00 Hr : 52 min : 42 sec", and a progress bar at "2 / 3 Attempted". The problem description states: "Once upon a time, in a kingdom far far away, there was a wise king who loved mathematics. One day, he gave a task to his court mathematician. The task was to find the complement of an integer. The court mathematician knew that the complement of an integer is the integer you get when you flip all the 0's to 1's and all the 1's to 0's in its binary representation (till most significant bit). Court mathematician couldn't solve the task. Can you help him in finding the complement of given Integer A." A note specifies: "Note: While taking complement you have to flip the bits till most significant bit of the given number." The problem constraints are "1 <= A < 2^30". The input format is "First argument A, is an integer." The output format is "Return a single integer." The Windows taskbar at the bottom shows the search bar, task view, and various application icons, with the system clock at "09:27 PM 03-03-2024".

SCALER | DSA: Contest 1: Arrays & Bit Manipulation
Reattempt 2 | 00 Hr : 52 min : 42 sec | 2 / 3 Attempted | End Test | Issues ?

King and Mathematician

Problem Description

Once upon a time, in a kingdom far far away, there was a wise king who loved mathematics. One day, he gave a task to his court mathematician. The task was to find the complement of an integer. The court mathematician knew that the complement of an integer is the integer you get when you flip all the 0's to 1's and all the 1's to 0's in its binary representation (till most significant bit). Court mathematician couldn't solve the task. Can you help him in finding the complement of given Integer A.

Note: While taking complement you have to flip the bits till most significant bit of the given number.

Problem Constraints

$1 \leq A < 2^{30}$

Input Format

First argument A, is an integer.

Output Format

Return a single integer.

Activate Windows
Go to Settings to activate Windows.

The screenshot shows the same Scaler.com interface, but with the Java solution code displayed in the editor. The code implements a class "Solution" with methods to check, unset, and set bits, and a "solve" method that finds the most significant bit and flips all bits up to it. The browser tabs and page header are identical to the previous screenshot. The Windows taskbar at the bottom shows the search bar, task view, and various application icons, with the system clock at "09:27 PM 03-03-2024".

SCALER | DSA: Contest 1: Arrays & Bit Manipulation
Reattempt 2 | 00 Hr : 52 min : 29 sec | 2 / 3 Attempted | End Test | Issues ?

```
1 public class Solution {
2     public static int checkBit(int a, int b){
3         return a&(1<b);
4     }
5
6     public static int unsetBit(int a, int b){
7         return a^(1<b);
8     }
9
10    public static int setBit(int a, int b){
11        return a|(1<b);
12    }
13
14    public static int msb(int a){
15        for(int i=30; i>=0; i--){
16            if(checkBit(a, i)>0){
17                return i;
18            }
19        }
20        return 0;
21    }
22
23    public int solve(int A) {
24        int msb = msb(A);
25        for(int i=0; i<=msb; i++){
26            if(checkBit(A, i)>0){ //if set, unset it using XOR
27                A = unsetBit(A, i);
28            }else{ //if unset, set it using OR
29                A = setBit(A, i);
30            }
31        }
32        return A;
33    }
34 }
```

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Question 2

SCALER | DSA: Contest 1: Arrays & Bit Manipulation | Reattempt 2 | 00 Hr : 01 min : 01 sec | 3 / 3 Attempted | End Test | Issues ?

Moving Coins

Problem Description

We have **N** coins, where the position of the **i**th coin is **A[i]**.

We need to move all the coins to the same position. In one step, we can change the position of the **i**th coin from **position[i]** to:

- position[i] + 2** or **position[i] - 2** with **cost = 0**.
- position[i] + 1** or **position[i] - 1** with **cost = 1**.

Return the minimum cost needed to move all the coins to the same position.

Problem Constraints

- $1 \leq N \leq 10^5$
- $1 \leq A[i] \leq 10^6$

Input Format

Only argument is an integer array **A**.

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SCALER | DSA: Contest 1: Arrays & Bit Manipulation | Reattempt 2 | 00 Hr : 00 min : 56 sec | 3 / 3 Attempted | End Test | Issues ?

See Expected Output

```
1 public class Solution {
2     public int solve(ArrayList<Integer> A) {
3
4         int n = A.size();
5
6         int evenCount = 0;
7         int oddCount = 0;
8
9         for(int i=0; i<n; i++){
10             if(A.get(i)%2==0){
11                 evenCount++;
12             }else{
13                 oddCount++;
14             }
15         }
16
17         return Math.min(evenCount, oddCount);
18     }
19 }
20
```

Reset

Correct Answer.

Info
Your test is about to be finished. Please submit your solutions.

Activate Windows
Go to Settings to activate Windows.